Ch 6 (Extra)
Sum and Product of Roots;
Writing Equations when given the roots

Given the solution set, write the equation.

ex 1:
{-5, 3}
sum = -2
prod = -15

$(x+5)(x-3)=0$
$x^2+2x-15=0$

ex 2:
{4, 6}
sum = 10
prod = 24

$(x-6)(x-4)=0$
$x^2-10x+24=0$

x^2 - (sum)x + product = 0
Sum & roots

Given the solution set, write the equation. No fractions/decimals

ex 3:
{-.5, 4}
sum = $3\frac{1}{2}$
product = -2

$2\left[x^2-3\frac{1}{2}x-2=0\right]$
$2x^2-7x-4=0$

Write the equation given the roots:

ex 4:
$\{-\frac{1}{2}, \frac{3}{4}\}$
sum = $\frac{1}{4}$
prod = $-\frac{3}{8}$

$8\left(x^2-\frac{1}{4}x-\frac{3}{8}=0\right)$
$8x^2-2x-3=0$

Write the equation given the roots:

ex 5:
$\left\{\frac{2\pm i}{3}\right\}$

$\frac{2+i}{3}, \frac{2-i}{3}$
sum: $\frac{4}{3}$
prod: $\frac{4-i^2}{9}=\frac{5}{9}$

$9\left[x^2-\frac{4}{3}x+\frac{5}{9}=0\right]$
$9x^2-12x+5=0$

Find k such that
$4x^2 + kx - 15 = 0$
has a root of $\frac{3}{4}$.

$4\left(\frac{3}{4}\right)^2 + k\left(\frac{3}{4}\right) - 15 = 0$

$4 \cdot \frac{9}{16} + \frac{3}{4}k - 15 = 0$

$\frac{3}{4}k = 15 - \frac{9}{4}$

$\frac{3}{4}k = \frac{51}{4} \cdot \frac{4}{3}$

$k = 17$

Also a good check.
Solve.
$x^2 + 5x - 24 = 0$